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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,672

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Werner Bonrath

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4996

23117 7590 05/21/2009  
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EXAMINER

KEYS, ROSALYND ANN

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

05/21/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/582,672	<b>Applicant(s)</b> BONRATH ET AL.	
	<b>Examiner</b> Rosalynd Keys	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 11, 12, 21 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1-22 are pending.  
Claims 1-10 and 13-20 are rejected.  
Claims 11, 12, 21 and 22 are withdrawn from consideration.

### ***Election/Restrictions***

2. Claims 11, 12, 21 and 22 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Because the applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election in the reply filed on February 8, 2008 has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Response to Arguments***

3. Applicant's arguments, see pages 6 and 7, filed March 5, 2009, with respect to the rejection(s) of claim(s) 1-10 and 13-20 under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. (Applied Catalysis A: General 220 (2001) 51-58) in view of Choudhary et al. (US 6,437,191) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Schneider et al (Applied Catalysis A: General 220 (2001) 51-58) in view of Itoh et al (US 2005/0176994).

Art Unit: 1621

The Examiner is reapplying this art because although the reaction in Schneider et al. to obtain the 2,3,5-trimethylhydroquinone diacetate is not a Friedel-Crafts acylation, Schneider et al. teach that catalysts that are useful in a Friedel-Crafts acylation are also useful in their "rearrangement-aromatisation with subsequent transesterification" reaction. Thus, the claims would have obvious because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

Art Unit: 1621

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-10 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al (Applied Catalysis A: General 220 (2001) 51-58) in view of Itoh et al (US 2005/0176994).

Applicants claim a process for the manufacture of 2,3,5-trimethylhydroquinone, dialkylate comprising reacting ketoisophorone with an acylating agent in the presence of an indium salt catalyst and further converting it by transesterification to  $\alpha$ -tocopherol.

Schneider et al. teach a process of reacting ketoisophorone (KIP) with acetic acid anhydride as the acylating agent in the presence of either a Nafion, triflic acid (trifluoromethanesulfonic acid) or sulfuric acid catalyst at a temperature of 45°C to form 2,3,5-trimethylhydroquinone diacetate (see pages 51-53 including the abstract). The trimethylhydroquinone diacetate is then further reacted via transesterification of 2,3,6-trimethylhydroquinone monoacetate and reaction of isophytol with trimethylhydroquinone to form (all rac)- $\alpha$ -tocopherol.

The difference between Schneider et al. and the claims is that Schneider et al. do not teach using indium (III) salt as the catalyst, the entire range of concentrations and temperatures as outlined in the claims.

Art Unit: 1621

Itoh et al. teach that Nafion, trifluoromethanesulfonic acid, sulfuric acid and indium (III) chloride are interchangeable Friedel-Crafts catalysts (see page 5, paragraph [0041]).

One having ordinary skill in the art at the time of the present invention would have found it obvious to utilize other known Friedel-Crafts catalysts, as taught by Itoh et al., including the claimed indium (III) salt, in the process as taught by Schneider et al. to prepare 2,3,5-trimethylhydroquinone dialkylate, since Schneider et al. has shown that the Friedel-Crafts catalysts Nafion, trifluoromethanesulfonic acid, and sulfuric acid are suitable for use in the preparation of 2,3,5-trimethylhydroquinone dialkylate. "A person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense." *KSR International Co. v. Teleflex Inc.*, 550 U.S.\_\_\_\_, 82 USPQ2d 1385, 1395-97 (2007).

With respect to the claimed concentrations and temperatures, merely modifying the process conditions such as temperature and concentration is not a patentable modification absent a showing of criticality. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 1621

Brown (US 3,772,251) teaches that indium trichloride is a known Friedel-Crafts catalyst (see column 2, line 67 to column 3, line 1).

Feasey et al. (US 3,966,851) teach that indium trichloride is a known Friedel Crafts catalyst (see column 2, lines 19-41).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is (571)272-0639. The examiner can normally be reached on M & T 5:30 am-7 am & 9:30 am-4:30 pm: W-F 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Sullivan can be reached on 571-272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rosalynd Keys/

Application/Control Number: 10/582,672  
Art Unit: 1621

Page 7

Primary Examiner, Art Unit 1621

May 15, 2009